Excerpts from

The Limits of Firms: Incentive and Bureaucratic Features*

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Why can't a large firm do everything that a collection of small firms can do and more? That is a variant of a question asked many times before for which an adequate answer has never been devised — to wit, what is responsible for limitations in firm size? Yet another way of putting the same issue is this: Why not organize everything in one large firm?

1. A Chronic Puzzle

Various answers have been advanced. They all suffer, however, from a failure to adopt and maintain the relevant comparative institutional standard.... Thus consider my treatment of limits on firm size in terms of the "control loss" phenomenon (Williamson, 1967). It involved the application to hierarchical organization of what F. C. Bartlett referred to as the serial reproduction effect in transmitting messages or images between individuals. His experiments involved the oral transmission of descriptive and argumentive passages through a chain of serially linked individuals. Bartlett concluded from a number of such studies:

> It is now perfectly clear that serial reproduction normally brings about startling and radical alterations in the material dealt with. Epithets are changed into their opposites; incidents and events are transposed; names and numbers rarely survive intact for more than a few reproductions; opinions and conclusions are re- versed-nearly every possible variation seems as if it can take place. even in a relatively short series. At the same time the subjects may be very well satisfied with their efforts. believing themselves to have passed on all important features with little or no change, and merely, perhaps, to have omitted unessential matters. (1932, p. 175)

Bartlett illustrated this graphically with a line drawing of an owl which, when redrawn successively by eighteen individuals, each sketch based on its immediate predecessor, ended up as a recognizable cat;

and the farther from the initial drawing one moved, the greater the distortion experienced (1932, pp. 180-81).

I applied the same argument to the firm size dilemma by invoking bounded rationality and noting that limited spans of control are thereby implied. If any one manager can deal directly with only a limited number of subordinates, then increasing firm size necessarily entails adding hierarchical levels. Transmitting information across these levels experiences the losses to which Bartlett referred, which are cumulative and arguably exponential in form. As firm size increases and successive levels of organization are added, therefore, the effects of control loss eventually exceed the gains. A limit upon radial expansion is thus reached in this way.

Plausible though the argument seemed at the time, it [presumes that] the entire firm is managed from the top. All information that has a bearing on decisions is transmitted across successive levels from bottom to top; all directives follow the reverse flow down....

Internal organization need not, however, adopt this structure. Suppose instead that the parent firm deals with each of its parts by exercising forebearance with respect to those activities where no net gains are in prospect (in which event the parent directs the operating part to replicate small firm behavior) and intervenes wherever coordination yields net gains. The puzzle to which I referred at the outset is evidently restored — or at least the serial reproduction loss "solution" does not apply — if such *selective intervention* is admitted. The same is true, moreover, of arguments that firm size is limited by growth (Penrose, 1959) or by organization capital (Prescott and Visscher, 1980). Both arguments ignore the possibility that merger may be coupled with selective intervention. Thus, if a series of small firms can grow rapidly, or if small firms can acquire valued organizational capital, a merger of those very same firms can selectively do the same and more.... If the set of activities to be organized is held constant, and if internal organization can intervene selectively, the purported disability of hierarchy in relation to a collection of small firms does not withstand scrutiny....

2. Integration of an Owner-Managed Supply Stage

The obvious answer to the puzzle of why firms do not comprehensively integrate is that selective intervention is not feasible. But why should that be? If the reasons were obvious, the puzzle of what is responsible for limitations on firm size would not persist.

I attempt here to identify some of the main reasons why selective intervention breaks down. So as to facilitate the argument, assume that an owner-managed supplier is acquired by the buyer. Assume that this ownership change is accomplished as follows:

1. A price at which the assets am transferred is agreed to.
2. The formula for determining the price at which product is to be transferred from the supply division to the buying division is stipulated.
3. So as to encourage cost economizing, the high-powered incentives that characterize markets are carried over into the firm. Accordingly, the supply division is advised that it will appropriate its net revenues—which are defined as gross revenues less division of operating costs, user charges (for asset maintenance and depreciation), and other relevant expenses (e.g. for R & D).
4. Selective intervention will obtain. Accordingly, the supply division is advised to conduct business as usual with the following exception: The supplier will accede to decisions by the buyer to adapt to new circumstances, thereby to realize collective gains, without resistance. Failure to accede is cause for and gives rise to termination.

Unified ownership of the assets of the two stages thus (1) preserves high-powered incentives (rule 3), (2) provides for selective intervention (rule 4), and (3) precludes costly haggling (rule 4). The last two features permit adaptive sequential decision-making economies to be realized by merging what had previously been nonintegrated stages of organization[1]. ... Rule 4 [implies that] failure to accede to any order to adapt will be cause for termination. Upon realization that successor managements can always be brought in to implement change orders as requested, the incumbent management always acquiesces.

Were this the end of the story, selective intervention with net gains would presumably obtain. In fact, however, numerous measurement difficulties stand in the way of implementing a merger agreement that is attended by high powered incentives. Some of them operate to the disadvantage of the buyer, some work to the disadvantage of the supplier, and others impose losses on both.

2.1 *Asset Utilization Losses*

The former owner-manager of the supply stage becomes the manager of the supply division upon sale of the supply stage assets to the buyer. The change of status has immediate and serious incentive effects if the high-powered incentive rules described above are employed. For one thing, the manager who appropriates the net receipts associated with the supply division no longer has the same incentives to utilize equipment with equivalent care and to incur identical preventive maintenance. Since, by assumption, the manager has no firm-specific human assets at stake, the manager behaves myopically with respect to the enterprise. The object being to maximize immediate net receipts, labor costs will be saved by utilizing equipment intensively, and maintenance expense will be deferred to a successor management. Having been paid for his assets upon giving up ownership status, the manager of the supply division proceeds to run them into the ground and leaves the firm to invest his augmented net receipts elsewhere.

To be sure, there are checks against asset abuses of both kinds. The new asset owner may insist that certain utilization and maintenance procedures be observed and furthermore monitor the supply division for compliance. Note, however, that added monitoring costs — unneeded in the nonintegrated state — have now been introduced. Additionally, reputation effects can deter managers from behaving irresponsibly. These, however, are imperfect. Some managers may shrug them off if the immediate gains are large enough and if they cannot be required to disgorge their ill-gotten gains. (Swiss bank accounts have attractive features in that respect.)

The upshot is that efficient asset utilization and the use of high-powered incentives experience tensions in an integrated firm — tensions that do not arise when the two production stages are independent. Contrary to the type of selective intervention that I postulated in section 1, the integrated firm cannot wholly replicate outside procurement in "business as usual" respects. Instead, there are *unavoidable side effects*.

2.2 *Accounting Contrivances*

The price at which a supplier agrees to sell his assets to the buyer will vary with the stream of net receipts that he projects in the post merger period. Given the high-powered incentives described above, that stream will vary with (1) revenues, (2) costs, and (3) continued employment.

One hazard is that the supplier will be "promised" a favorable net receipt stream, hence accept a low price for transferring asset ownership, only to learn to his dismay that his employment has been terminated. Suppose, out of awareness of such a hazard, the supplier demands and receives a guarantee of continued employment. Such guarantees accomplish little, however, if the net receipts of the supply division can be altered substantially through the exercise of accounting discretion. Expropriation can then be accomplished by indirection.

Net receipts can be squeezed in either or both of two ways. For one, revenues can be reduced by cutting transfer prices. For another, cost imputations can be raised. The supply division is vulnerable in both respects.

Given the impossibility of comprehensive contracting, the transfer pricing rule that is stipulated at the outset will necessarily be incomplete. So as to correct against misalignments, prices will need to be reset periodically to reflect changing circumstances. This can be done by consulting the market if asset specificity is zero. Complications intrude, however, when even a slight degree of asset specificity appears. Thus although the terms under which product is traded between autonomous parties are disciplined by the credible threat that the supplier will retire his specialized assets, rather than use them to support the supplier's specialized procurement needs, if mutually acceptable terms am not reached, the manager of the supply division in the integrated firm does not have the same option. If push comes to shove, the physical assets are no longer his to retire (or, more generally, redeploy). Employment guarantees notwithstanding, the manager of the supply division can, if he refuses to accept the proposed terms, be brushed aside. (He is simply "reassigned.") Upon merger, therefore, the determination of transfer prices has, in effect, become a decision for the purchasing division (which now owns the assets of both parts) to reach unilaterally. The hazard is obvious: Despite assurances to the contrary, prices will be set so as to squeeze the net receipts of the supply stage.

Cost determination is problematic, moreover, whatever the degree of asset specificity. Whereas each stage determines its own accounting practices in the pre-merger regime, that is no longer permitted — indeed, is wholly implausible-upon merger. Instead, responsibility for the accounting rates will be concentrated on the asset owner. Explicit agreements that limit accounting discretion notwithstanding, the supply stage runs the risk that costs will be reset to its disadvantage.

The upshot is that the supply stage is better advised to discount very heavily any promise that favorable net receipt streams are in prospect and to realize its full bargaining advantage by extracting maximum asset valuation terms at the outset — because a squeeze is in prospect thereafter. But there is more to it. If the use of high-powered incentives in firms is inherently subject to corruption, then the notion that the integrated firm can do everything that the nonintegrated parts could accomplish is a fiction. Instead, the integrated firm does better in some respects and worse in others.

2.3 *Incentive Ramifications.*

High-powered incentives in firms give rise to difficulties of two kinds: The assets of the supply stage are not utilized with due care, and the net revenue stream of the supply stage is subject to manipulation. Upon realization that high-powered incentives in firms experience such disabilities, lower-powered incentives are apt to be introduced instead. Were the supply stage management to be compensated mainly by salary and become subject to periodic monitoring (decision review, auditing, and the like), the supply stage would have less need to be concerned with accounting chicanery, and the asset owner's concern with asset dissipation would be lessened.

Low-powered incentives have well-known adaptability advantages. That, after all, is what commends cost plus contracting. But such advantages are not had without costs — which explains why cost plus contracting is embraced reluctantly (Williamson, 1967a). Our first explanation for why firms do not everywhere supplant markets thus is that (1) firms cannot mimic the high-powered incentives of markets without experiencing added costs, (2) although recourse by firms to lower-powered incentives is thereby indicated, that too comes at a cost; and (3) those added costs of internal organization are not offset by comparative adaptability gains under circumstances where [assets are not transaction-specific], since those are precisely the conditions under which the identity of the parties does not matter, whence classical market contracting works well....

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7. Concluding Remarks

Why can't a large firm do everything that a collection of small firms can do and more? The basic argument of this chapter is this: Selective intervention, whereby integration realizes adaptive gains but experiences no losses, is not feasible. Instead, the transfer of a transaction out of the market into the firm is regularly attended by an impairment of incentives. It is especially severe in circumstances where innovation (and rewards for innovation) are important. But it appears in all transactions of the non-Nirvana kind... The market is a marvel,...not merely because of its remarkable signaling properties (under the requisite preconditions), but also because of its remarkable capacity to present and preserve high-powered incentives.

Although the argument is especially transparent in the case where a pre-acquisition owner-manager is reduced to mere manager status upon acquisition, incentive consequences also attend mergers in which pre-acquisition managers hold no significant ownership position. The problem in the former case is that post-merger efforts to preserve high-powered incentives give rise to distortions and are apt to be corrupted, as a consequence of which low-powered incentives are instituted in their place. The problem in the latter case is that even low-powered (salaried) compensation schemes have contingent reward features in both payment and promotion respects. Those are likewise subject to impairment in the post-acquisition condition.

Efforts to "hold incentives constant," thereby to effect incentive neutrality, thus turn out to be delusional. The problem is that none of the following is costlessly enforceable: promises by division managers to utilize assets with "due care"; promises by owners to reset transfer prices and exercise accounting discretion "responsibly"; promises to reward innovation in "full measure"; promises to preserve promotion prospects "without change"; and agreements by managers to "eschew politics." Internalizing the incremental transaction leads to incentive disabilities in all of those respects, and as a consequence transactions are apt to be organized in an altogether different way upon merger.

Thus, although it is useful to think of markets and hierarchies as alternative modes with many common features, it is also essential to recognize that distinctive strengths and weaknesses are associated with each. Both incentive and governance features have to be acknowledged. As compared with internal transactions, market mediated transactions rely more on high-powered incentives and less on the administrative process (including auditing) to accomplish the same result.

* Chapter 6, *The Economic Institutions of Capitalism* by Oliver E. Williamson, New York: The Free Press (1985), 131-62.

[1]Implicit in the argument is the assumption that the two stages are operating in a bilateral exchange relation with each other by reason of investments in transaction-specific assets.